

**WHAT IS CLAIMED IS:**

1. A sensor for providing a position-related signal for a first element in relation to a second element, the sensor comprising:

a flexible connector having a first end attachable to the first element;

a rotating element attachable to the second element and coupled to a second end of the flexible connector;

a translating member cooperating with the rotating element; and

a transducer disposed to sense a position of the translating member, wherein the transducer provides the position-related signal.

2. The sensor of claim 1 wherein the translating member is in threaded communication with the rotating element.

3. The sensor of claim 1 wherein the translating member displaces along an axis of rotation of the rotating element.

4. The sensor of claim 1 wherein the transducer is one selected from the group comprising a LVDT, a DVRT, a potentiometer, an inductive transducer, a capacitive transducer, and a Hall-effect transducer.

5. The sensor of claim 1 wherein the first element is a piston and the second element is a cylinder.

6. The sensor of claim 5 wherein the working fluid comprises hydraulic fluid.

7. A cylinder comprising a piston and a sensor operable to provide a position-related signal for the piston; the sensor including:

a flexible connector having a first end attached to the piston;

a converting element attached to the cylinder and coupled to a second end of the flexible connector; the converting element having a rotating element operable to rotate in dependence on movement of the piston;

a translating member cooperating with the rotating element, wherein the translating member linearly displaces upon rotation of the rotating element; and

a transducer disposed to sense the translating member.

8. The cylinder of claim 7 wherein the translating member displaces proportionally to displacement of the piston.

49. The sensor of claim 1 further comprising a recoil mechanism coupled to said rotating element for imparting a rotational action on said rotating element.

50. The sensor of claim 1 wherein the transducer comprises an LVDT.

51. The sensor of claim 1 wherein the transducer comprises a Hall-effect transducer.

52. The sensor of claim 1 further comprising an anti-rotational force exerted on said translating member.

53. The sensor of claim 1 further comprising an anti-backlash force exerted along a longitudinal axis of said translating member.